HANCOCK WOODS
SITE ANALYSIS

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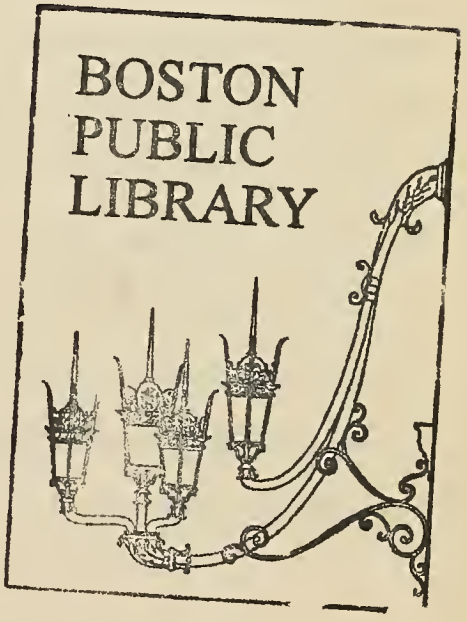

BOSTON CONSERVATION COMMISSION

MARCH 1976

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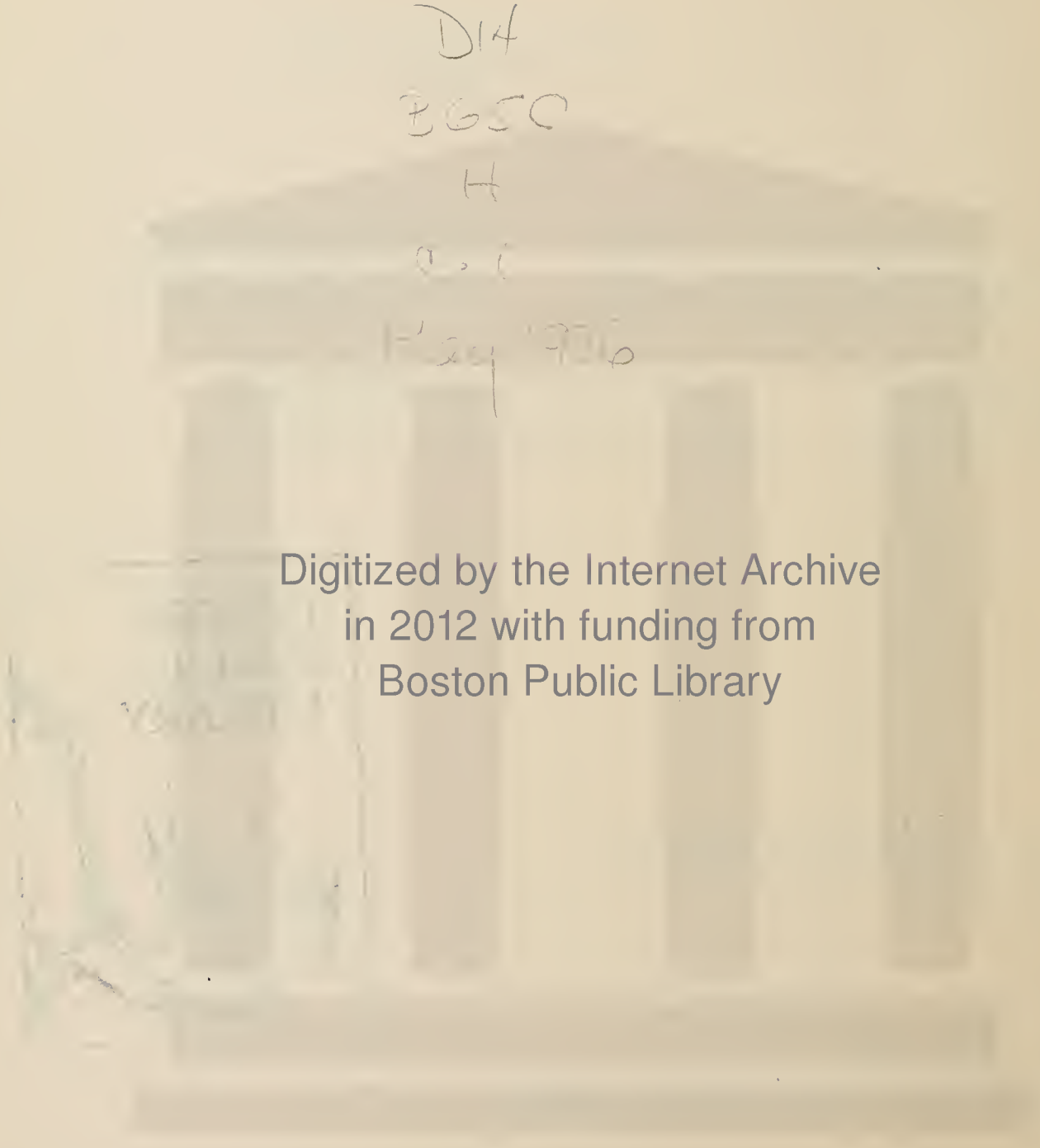
Massachusetts Audubon Society Intern



INTRODUCTION

This report analyzes the natural and cultural features of a 55 acre wooded site in the West Roxbury section of Boston. The area, which is owned primarily by the John Hancock Mutual Life Insurance Company, is known as Hancock Woods. The study was initiated by the Boston Conservation Commission which is interested in furthering a better understanding and appreciation of the natural features of the site. One of the most significant undeveloped areas in the city, Hancock Woods contains extensive wetlands, the headwaters of the Sawmill Brook and a variety of vegetation and wildlife. Most of the surrounding area is occupied by residential development. Several multi-family apartment complexes are indicative of a trend toward higher density living in what used to be primarily a neighborhood of single family homes. Hancock Woods itself has resisted development because a combination of rock outcrop and wetland conditions would significantly raise construction costs. These factors may no longer be sufficient to insure that the area will remain as open space, however. In recent years substantial filling and construction have taken place in the western portion of the wetland, adjacent to the Newton boundary.

Hancock Woods is one of the most highly rated sites for natural value and importance in the city according to the Boston Redevelopment Authority's Urban Wilds Study where it ranks 9th out of 143 sites.* The importance of Hancock Woods as an urban open

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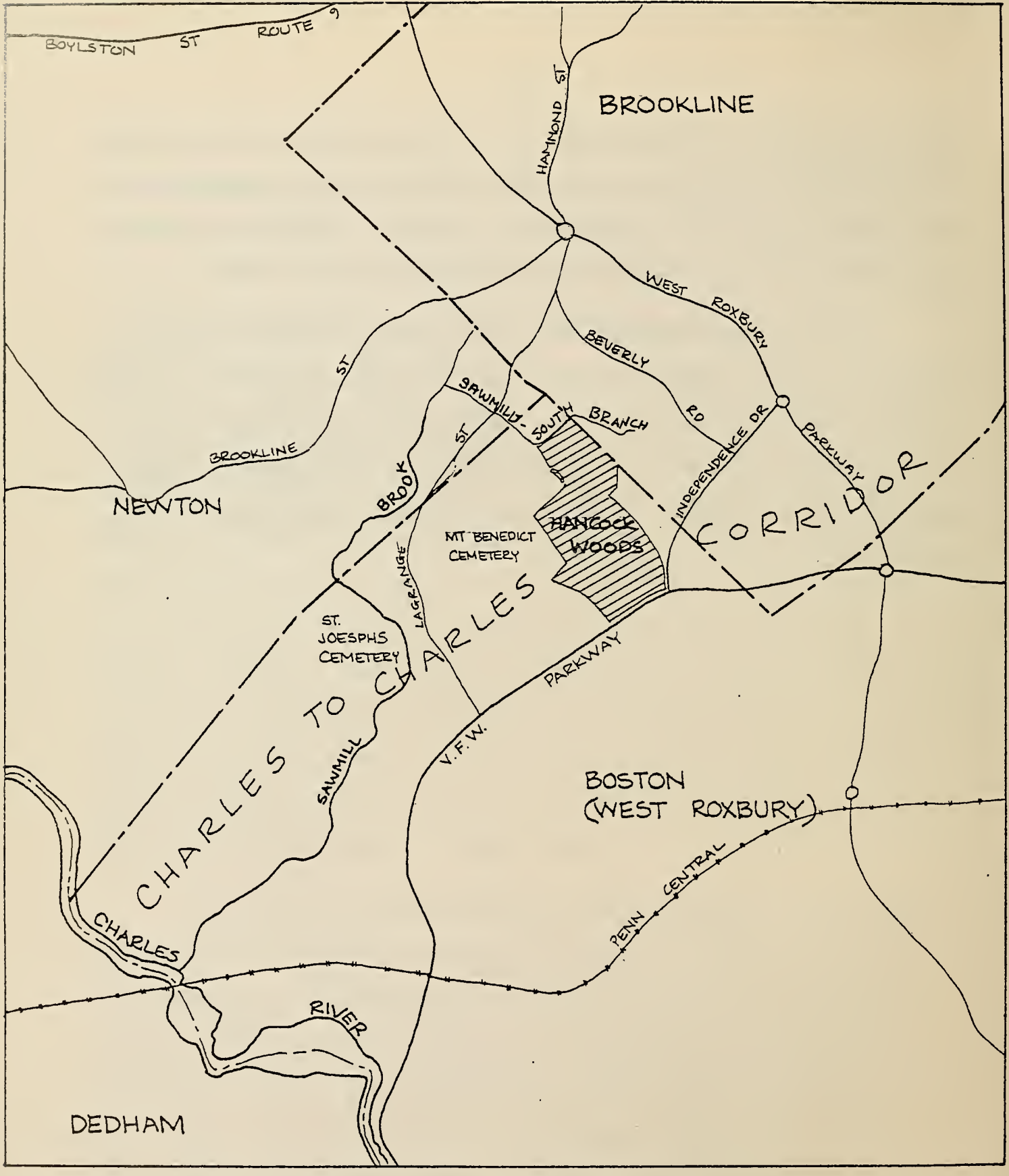
* The Boston Urban Wilds Project is presently inventorying undeveloped areas in the City of Boston to identify their potential for conservation and recreation. A report summarizing the work will be available spring 1976.

space has also been identified by the Boston and Brookline Conservation Commissions which have included the area in the proposed "Charles to Charles" corridor. The corridor is a linear system of open space running through the Fens, along the Boston/Brookline boundary and through the Sawmill Brook Marshes near the Boston/Newton boundary to the Charles River at Cow Island Pond. Continuity is important in such a system because it substantially adds to recreational potential by supporting linear activities such as hiking and bicycle riding as well as more localized activities. Linear open space also encourages wildlife because it expands their range, providing more sources of food and cover. Hancock Woods is a particularly critical and vulnerable link in the Charles to Charles corridor. Portions of the corridor to the south are largely in public or semi-public ownership, primarily cemeteries, and are likely to remain as such. To the north are many areas which are already public open space such as the Hoar Bird Sanctuary, Jamaica Pond, Arnold Arboretum and Olmsted Park.

There are also important hydrologic reasons which support the continued existence of Hancock Woods as a natural area. A full hydrologic investigation is beyond the scope of this report but many changes have occurred as the surrounding area has been developed. Some of the development in the area could serve as a case study in what <u>not</u> to do in a wetland. Disruption of stream flow, water pollution, uneven settling of foundations and flooded basement apartments are some of the problems which have occurred. Increased runoff and reduced flood storage are other issues which

have been raised. Public awareness of the problems and strengthened wetland legislation and zoning may be of some assistance in the future but the best solution is to avoid any further filling and construction in such environmentally sensitive areas.

The recreational appeal of the area is demonstrated by trails and other signs of active use. Hancock Woods also acts as a visual and noise buffer to the surrounding residential areas. The extent of the area and the diversity of the landscape make Hancock Woods a unique and valuable resource which should not be destroyed.



HANCOCK WOODS LOCATION

0 1000' 2000'

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BASE MAPS

Maps One through Five in this report include information from several different sources with varying levels of accuracy. The primary source was the City of Boston Topographic and Planimetric Survey (1965) at 1"=100' and 1"=200' with five foot contour interval. In areas outside the City of Boston the 1970 U.S.G.S. quadrangle at 1"=2000' with ten foot contour interval was the primary source. For changes occurring since 1965, air photos taken in 1969 and site plans of individual projects were used. These changes include new buildings at Chestnut Hill Park and Broadlawn Park, landfill associated with these two developments and the addition of a fire road in the Hoard Bird Sanctuary. In areas where changes have occurred, a dotted contour line is used to indicate that accurate contour information is not available.

All elevations shown are Boston City Base (BCB) which is 5.65 feet lower than mean sea level datum. This should be taken into account when comparing with other topographic maps such as U.S.G.S. quadrangles. The sections in Map 5 are intended to be diagrammatic rather than literal. Their vertical scale is exaggerated to provide a better pictorial representation.

Zoning and Ownership

The area referred to as Hancock Woods is actually composed of three parcels which are described below.

Parcel No.: 6995
Ownership: John Hancock Mutual Life Insurance Company
Acreage: 2,063,290 sq. ft.
Zoning: L-5 (retail and service stores)
S-3 (single family residential)
Valuation: $206,300 (.10/sq. ft.)
Taxes: $40,000

Parcel No.: 7013-50
Ownership: Mary C. Jope, Trustee of Kingston Realty Trust
Acreage: 346,374 sq. ft. (8 acres)
Zoning: R-5 (2-3 family units)
Valuation: $37,000 (.09/sq. ft.)
Taxes: $7,278

Parcel No.: 7013-55
Ownership: Mary C. Jope, Trustee of Kingston Realty Trust
Acreage: 26,376 sq. ft. (.6 acres)
Zoning: R-5 (2-3 family units)
Valuation: $2,600 (.10/sq. ft.)
Taxes: $511

Total for the three parcels: Acreage: 55.6 acres
Valuation: $245,900
Taxes: $47,789

Site Features (Map 1)

The Site Features Map is concerned primarily with the social and cultural aspects of Hancock Woods and the relationship of human activities to the area.

Land Use -- There is no evidence of previous land use in Hancock Woods itself. The surrounding area is primarily residential with single family homes to the southeast and to the east across V.F.W. Parkway. A small neighborhood shopping center is located at the corner of Independence Drive and V.F.W. Parkway to the northeast of Hancock Woods. West of the shopping center is Hancock Village, a pleasant residential area well integrated with the topography and carefully landscaped. West of Hancock Village is the D. Blakely Hoar Bird Sanctuary managed by the Brookline Conservation

Commission. Sanctuary walks are held several times a year and students from the adjacent Baker School also use the area. To the northwest of Hancock Woods, along the Newton boundary, are Chestnut Hill Park and Broadlawn Park, two apartment complexes which have recently expanded. Both are built at a higher density than the surrounding residential areas and have less of a neighborhood character. South of Chestnut Hill Park is Mount Benedict Catholic Cemetery.

Site Character -- One of the most distinctive characteristics of Hancock Woods is the fact that it is large enough to isolate one from the noise and bustle of the city. Even in winter it is difficult to hear or see V.F.W. Parkway from within the woods. Part of this is due to the density of the vegetation, particularly in the low, wet areas where there is heavy understory. The raised areas associated with the rock outcrops are like islands rising out of the wetlands. They are less densely vegetated and provide an excellent place to climb and explore. There are relatively few vistas except from Mount Benedict, although the clearing in the central part of Hancock Woods does provide a contrast to the woods. The fire road in the Hoar Bird Sanctuary and the raised path leading to the rock outcrops from Hancock Village are important in making the area accessible. Both serve as bridges through the wet-lands which are difficult to cross during much of the year.

Hancock Woods is relatively undisturbed except for footpaths and other indications of casual use. There are several

junked cars in the central clearing as well as broken glass, beer cans and other debris which could easily be cleared away.

Landforms (Map 2)

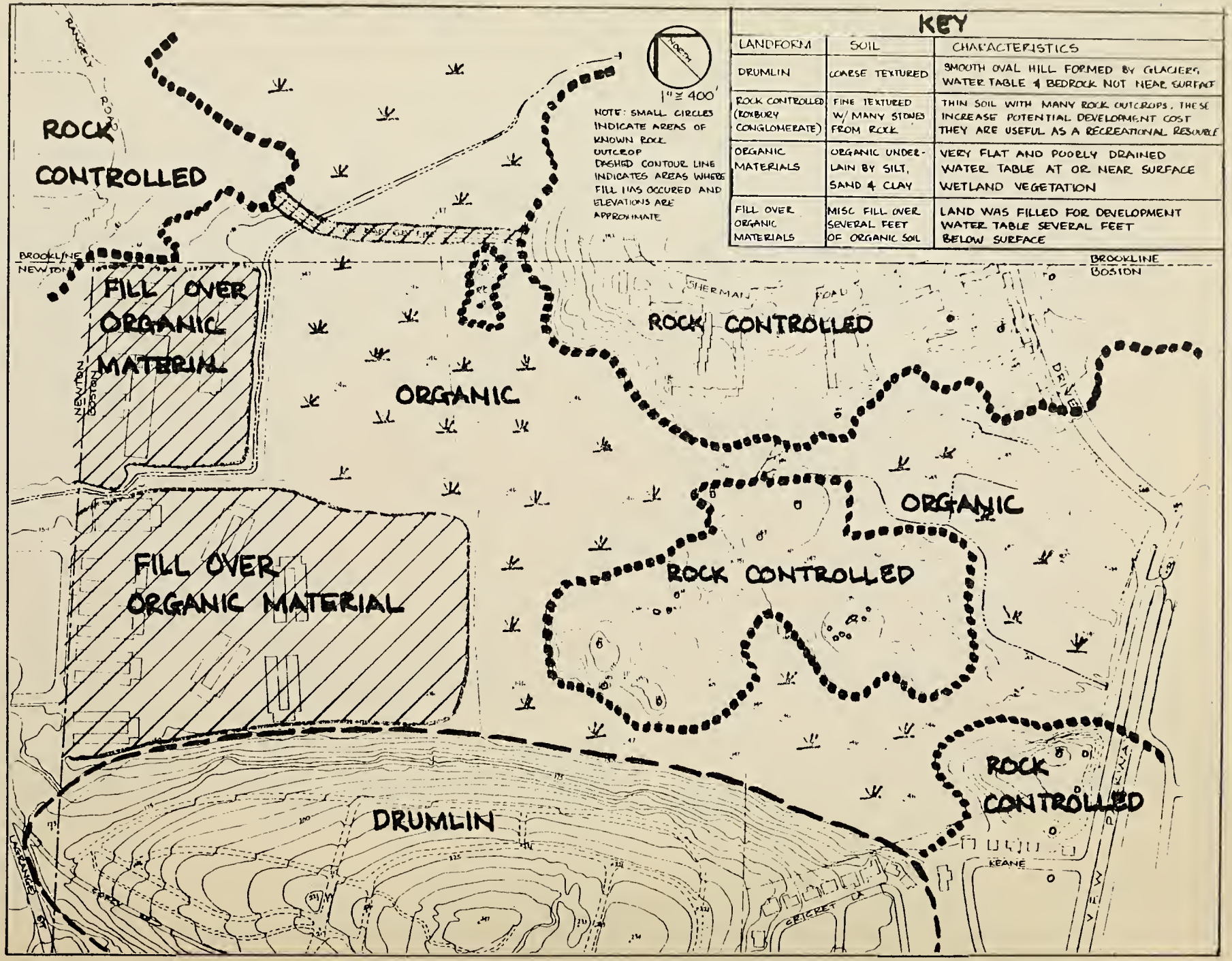
Landforms are a primary factor in determining the characteristics of an area, influencing drainage, topography, soils, vegetation and micro-climate. In places with a complex geologic history such as Boston, many different landforms can occur in a relatively small area. At Hancock Woods this variation creates spatial diversity and a wide range of site conditions. The landforms shown on the map are discussed below.

Drumlin -- Mt. Benedict, immediately to the southwest of Hancock Woods, is one of approximately 180 drumlins or glacially formed hills in the Boston area. Like Mt. Benedict the majority of these are oriented northwest-southeast, reflecting the flow direction of the most recent glaciation. Drumlins form the highest points in the Boston Basin and as such are valued for the excellent viewing potential which they provide. From Mt. Benedict it is possible to see south to the Blue Hills and northeast over Brookline and Roxbury toward Boston. The slope of the drumlin adjacent to Hancock Woods is quite steep and would be subject to erosion if the area were heavily used or the vegetation removed. Mt. Benedict is not likely to be disrupted by development since it is currently a cemetery.

Rock Controlled -- Substantial portions of Roxbury and the surrounding area are characterized by a rock controlled topography

SITE FEATURES 1

LANDFORMS



KEY

LANDFORM	SOIL	CHARACTERISTICS
DRUMLIN	COARSE TEXTURED	SMOOTH OVAL HILL FORMED BY GLACIERS, WATER TABLE & BEDROCK NOT NEAR SURFACE
ROCK CONTROLLED (ROXBURY CONGLOMERATE)	FINE TEXTURED W/ MANY STONES FROM ROCK	THIN SOIL WITH MANY ROCK OUTCROPS, THESE INCREASE POTENTIAL DEVELOPMENT COST THEY ARE USEFUL AS A RECREATIONAL RESOURCE
ORGANIC MATERIALS	ORGANIC UNDERLAIN BY SILT, SAND & CLAY	VERY FLAT AND POORLY DRAINED WATER TABLE AT OR NEAR SURFACE WETLAND VEGETATION
FILL OVER ORGANIC MATERIALS	MISC FILL OVER SEVERAL FEET OF ORGANIC SOIL	LAND WAS FILLED FOR DEVELOPMENT WATER TABLE SEVERAL FEET BELOW SURFACE

with frequent outcrops occurring. Such is the case in Hancock Woods where Roxbury Conglomerate, also known as Roxbury Puddingstone, is exposed 10-20 feet above the surrounding area in places. The topography indicates that the base of the outscrops is masked by thin layers of fine textured soil which is interspersed with cobbles and pebbles, "raisins" from the puddingstone. Cracks and fractures illustrate the weathering of the exposed rock which is ideal for climbing and exploring. Construction in areas with surficial rock is extremely expensive but can be done if economic conditions warrant it. A good example is the adjacent John Hancock Village where buildings have been carefully sited to variety and utilizing rock outcrops as landscape features.

Organic Materials -- One of the effects of glaciation was to disrupt river channels and create areas which are poorly drained. This is true throughout New England where there are many ponds and inland wetlands. In the case of Hancock Woods, its tendency to be poorly drained has been aggravated by filling and other human activity. The area designated on the map as organic is low and flat with a high water table. The wetness of the area prevents rapid decomposition of organic materials. Borings taken near Hancock Woods indicate that the organic layer ranges from two to twenty feet thick. Development is difficult in areas with organic soil because of the high water table and poor bearing capacity. Fill can be used to raise the ground above water table for construction but there are often problems associated with this procedure.

Fill Over Organic Material -- Some of these problems are

in evidence in areas adjacent to Hancock Woods which have been filled and developed. Uneven settling and flooding of basements are problems to the resident or developer while water pollution, loss of flood storage and destruction of wetlands are of concern to the entire community. Apart from supporting residential development, fill has been used in Hancock Woods as a means of providing access through the wet areas.

Hydrology (Map 3)

One of the most important issues for a conservation commission which is charged with regulating the development of wetlands is evaluating the impacts of human activity. Extensive data would be required to fully document the hydrologic situation in Hancock Woods but some indicators are readily available. One of these involves a comparison of maps (See Topographic Change Map 3a) which show the area in 1903 and 1970 respectively. It should be noted however that the scale and contour interval are different on the two maps. The low-lying portions of Hancock Woods are shown as marsh in the earlier map and extend all the way to the southern tip of Brookline. Today Hancock Woods consists primarily of wooded swamp which is not indicated on the map and the extent of the wetland is substantially reduced. This inevitably results in increased run-off and greater potential flood hazard downstream.

Drainage -- Run-off from the eastern portion of Hancock Woods is channelized and directed to a storm sewer under V.F.W. Parkway which eventually empties into the Sawmill Brook at St. Joseph's Cemetery. The channelization is an attempt to lower the

HYDROLOGY

P/D

1902 SCALE - 1:62,500 CONTOUR INTERVAL - 20'

1970 SCALE - 1:24,000 CONTOUR INTERVAL - 10'

TOPOGRAPHIC CHANGE

5A

water table, possibly initiated as a mosquito control measure. The western portion of Hancock Woods drains directly into the Sawmill Brook. The Hoar Bird Sanctuary contains the headwaters of what has been designated the south branch of the Sawmill Brook (see Location Map). In the bird sanctuary, small channels have been dug to aid drainage into the brook and to lower the water table, also preventing stagnation. After passing through a culvert at the northwest end of the fire road, the south branch of the Sawmill Brook enters Boston. At this point its channel has been altered. The old alignment is shown as a grey dashed line while a black dash-dot-dot-dot-line indicates the current brook. The realignment was done to facilitate construction of Broadlawn Park. The current brook is held as a sewage easement by the City of Boston.* After skirting Broadlawn Park, the brook passes into Newton where it joins the north branch and subsequently makes its way to the Charles River near Cow Island Pond. Except where it has been channelized by human action, the Sawmill Brook does not have a well formed channel and consequently has extensive wetland associated with it.

Other drainage problems occur as a result of landfill associated with construction. Early U.S.G.S. maps appear to indicate a northwest drainage pattern between Mount Benedict Cemetery and what is now Chestnut Hill Park. Recent field observations show that the natural drainage flow has been blocked, forcing water to take a circuitous path around the filled land. At the time of the 1965 air photos a small area of open water was observed in what is now the location of one of the Chestnut Hill Park buildings. A

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* See Boston Public Works Department Plan No. 1625, Sawmill Brook, West Roxbury.

similar body of water was visible in the 1969 air photos except that the water had been relocated easterly to the edge of the fill. The standing water was stagnant and foul smelling. Its drainage was blocked by debris and construction materials.

Water Table -- Elevation of the standing water mentioned above is shown on the 1965 maps as 147 BCB which can be assumed to be the approximate water table elevation at that date throughout the lower portions of Hancock Woods. It should be noted that the aerial photographs from which the map was made were taken in May, a time of relatively high water table. Borings taken in December 1972 prior to the construction of Broadlawn Park Phase II indicate a water table between 143.9 and 148 BCB.

Water Quality -- There is no regular program of water quality monitoring in the upper Sawmill Brook but at least one instance of extensive pollution was documented in Fall 1968. Members of the Charles River Watershed Association and the Department of Natural Resources identified levels of up to 30,000 B. coli per 100 ml sample. The location given for this particular sample is "at inlet entering Brook from Nardelli apartment project" (Chestnut Hill Park).* Upstream in the Hoard Bird Sanctuary the level was 100 B. coli per 100 ml sample while downstream in Newton the level was 13,000 ml.

Wetlands -- Much of the study area is subject to the Wetlands Protection Act (G.L., Chap. 131, Sec. 40, as amended), particularly

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* See letter sritten by Mrs. Helen Heyn of the Charles River Watershed Association to the Water Pollution Division of the Department of Natural Resources, November 1968.

those areas containing marsh and swamp vegetation, most of which are at or below elevation 147. Areas containing marsh and swamp vegetation are also included in the proposed Flood Hazard District, currently being considered by the City of Boston Zoning Commission. The characteristics of the wetland vegetation will be discussed more fully in the next section.

Vegetation Zones (Map 4)

One of the most attractive aspects of Hancock Woods is variety, much of which is due to the many different kinds of plants found in the area. There are distinct vegetation zones each with its own unique characteristics. Some of the zones occur naturally while others are a product of human intervention.

Wetland -- Wetlands with their flat surface and high water table present a special environment for plants and animals. Many wetlands were once ponds which over a long period of time have filled in, gradually supporting larger vegetation. The wooded swamp at Hancock Woods indicates that the area is relatively dry as wetlands go since it can support mature red maples, the most characteristic of the wooded swamp species. However the high water table forces the trees to form shallow root systems which results in many blown down trees. Fluctuations in water table can also kill wetland trees, a reason for taking great care in setting the elevation of culverts and other drainage structures. Wetland vegetation is dense and lush, often making the area inaccessible in summer.

Evergreen -- The mature hemlock-beech forest at the eastern edge of the bird sanctuary is highly unusual in an urban area. Both

are climax species, those which would eventually become dominant if the woods were left undisturbed for a long period of time. Apart from being of botanical interest, the hemlock-beech forest is quiet and pleasant to walk through and the evergreens are a pleasant sight in the city in winter.

Upland -- The upland vegetation is generally associated with the rock outcrops and relatively thin soil around their base. Oak is the predominant species with some birch. The thin rocky soil cannot support dense vegetation so upland areas are sparsely vegetated compared to the wetlands.

Open -- The three previous categories are the "natural" vegetation zones which would occur without human intervention. Open zones as shown on the map are areas which have recently been disturbed by human activity and are in the early stages of succession. Most of the open areas are caused by filling or construction but such disruption can serve a very useful ecological function, encouraging growth of species which could not compete in a forested area. The Brookline Conservation Commission has purposely made clearings in the woods to encourage new species which provide food and cover for birds. A number of exotic plants have been found in Hancock Woods and the Bird Sanctuary. Apparently birds carry seeds of these plants from the Arnold Arboretum nearby.

Parkway -- V.F.W. Parkway is shown as a separate vegetation zone because of the very successful planting of street trees there. Pin oaks are used on the outer edges of the highway where there is

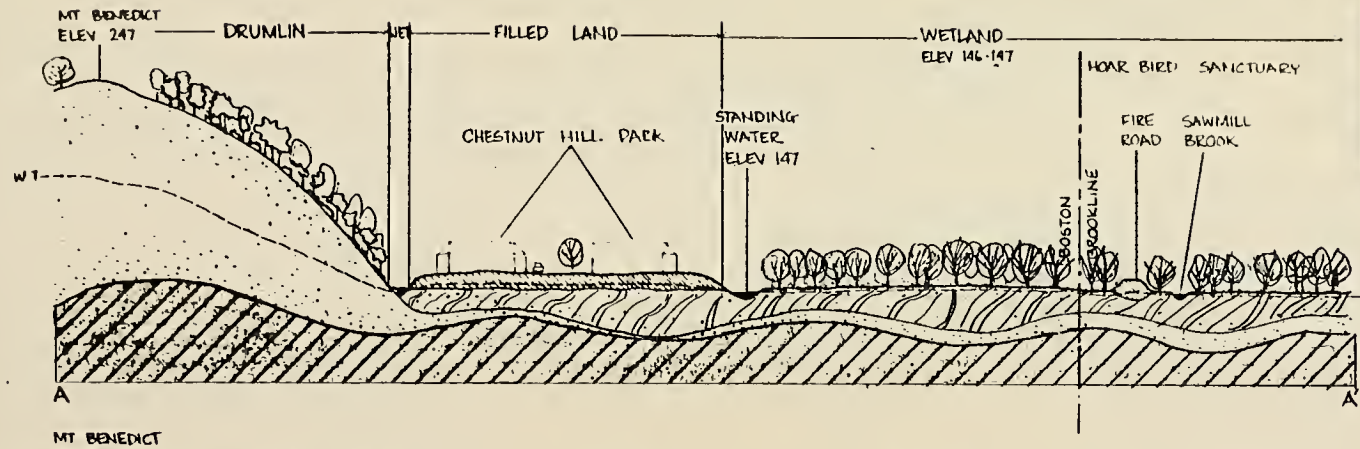
VEGETATION

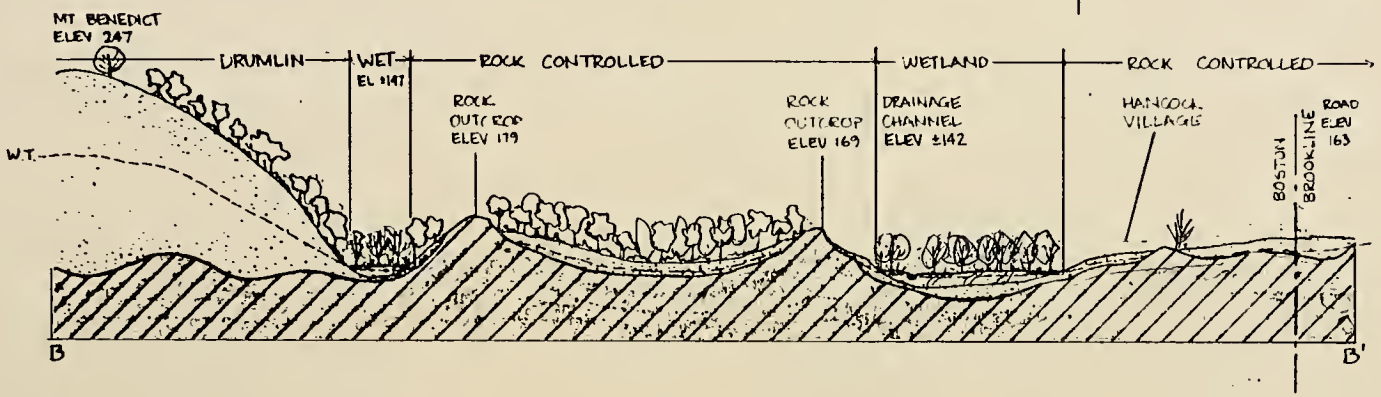
4

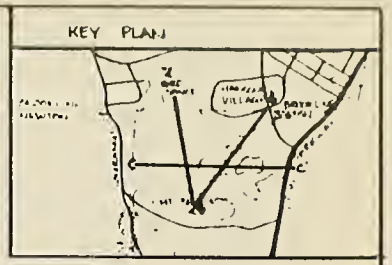
KEY

ZONE	INDICATOR SPECIES	COMMENTS
WETLAND	RED MAPLE	WETLANDS ON THE SITE ARE PRIMARILY WOODED SWAMPS THEY OCCUR WHERE SEASONAL WATER TABLE IS AT OR NEAR THE SURFACE
EVERGREEN	HEMLOCK, BEECH	A CLIMAX FOREST NOT OFTEN FOUND IN URBAN AREAS
UPLAND	OAK	FOUND IN THE DRIER PORTIONS OF THE SITE
OPEN	MIXED	AREAS WHICH HAVE RECENTLY BEEN DISTURBED BY HUMAN ACTIVITY AND ARE IN THE EARLY STAGES OF SUCCESSION
PARKWAY	PIN & SCARLET OAKS	V F W PARKWAY IS OFTEN CITED AS A GOOD EXAMPLE OF STREET TREE DESIGN
INSTITUTIONAL (CEMETERY)	PLANTED SPECIES	GRASS & MATURE TREES WITH NO INTERMEDIATE VEGETATION A HIGHLY MANAGED ZONE
RESIDENTIAL	VARIED	OLDER RESIDENTIAL PLANTINGS ARE RICH AND VARIED, NEWER ONES ARE RELATIVELY BARREN

SECTIONS





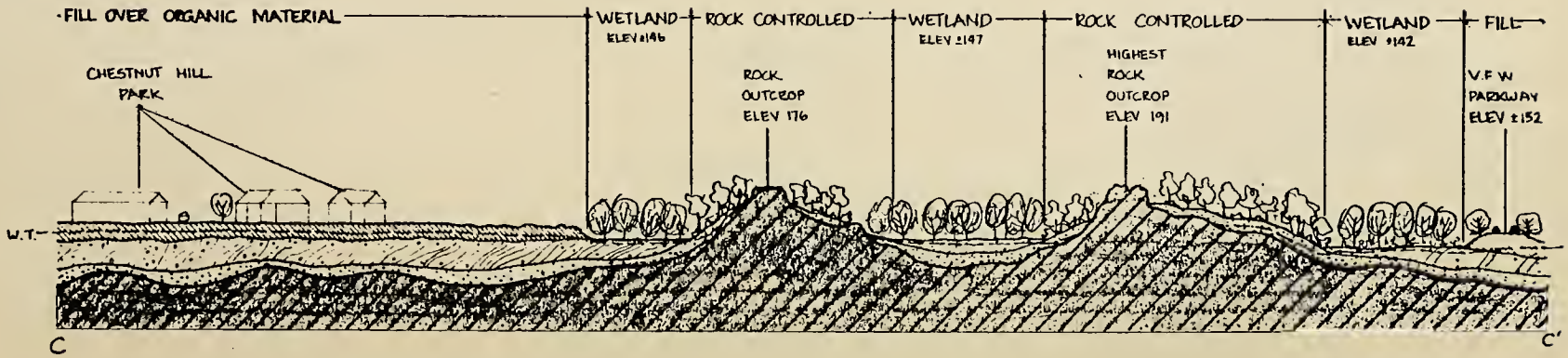


KEY TO SYMBOLS

- FILL
- PEAT
- SAND, GRAVEL, CLAY
- BED ROCK
- W.T. --- WATER TABLE
- UPLAND VEGETATION
- WETLAND VEGETATION
- PLANTED TREES

THESE SECTIONS ARE INTENDED AS DIAGRAMS TO AID IN UNDERSTANDING CONDITIONS AT HANCOCK WOODS. THEY ARE BASED ON TYPICAL CONDITIONS IN THE SURROUNDING AREA

1" ≅ 400'



C2

room for their spreading form while scarlet oaks, a more upright compact tree, are planted on the center strip.

Institutional (Cemetery) -- The vegetation in Mount Benedict Cemetery is a highly managed system. It differs from a natural system in that it has a low carpet of frequently mowed grass and planted, mature trees but no intermediate vegetation such as shrubs or seedlings.

Residential -- Like the cemetery, the residential plantings are highly managed but at a different scale. The apartments to the northwest of Hancock Woods have only a few scattered trees and shrubs while Hancock Woods and the single family residential neighborhood are well planted. The most successful plantings make use of both natural and planted species, chosen to provide a varied landscape throughout the year.

Sections (Map 5)

These are intended to provide a pictorial representation of site conditions at Hancock Woods and to show the relationship of the various elements discussed previously.

CONCLUSION

Hancock Woods is a valuable asset. It is used by many people from the surrounding area for whom it also serves as a buffer against increasingly dense urban life. It is a place for children to play and for young and old alike to observe nature first hand without having to drive many miles. Diverse plant and animal communities live in Hancock Woods, one of the few areas in

the city where some of them can be found. Hancock Woods is also an important link in the Charles to Charles corridor with Mount Benedict Cemetery on the south and Hoar Bird Sanctuary on the north. The many hydrologic problems resulting from existing development affect not only the immediate vicinity; water pollution, reduced flood storage and increased run-off have regional impact.

The significance of Hancock Woods as a potential conservation area is undeniable. If all or part of it should become available, high priority should be placed on acquiring it. Other possible strategies might include conservation easements or restrictions if purchase is not feasible.

Minimal changes would be required if Hancock Woods were acquired for conservation. Initial removal of junk and debris would be the major expense. A woodland management program should be instituted to maintain healthy and diverse vegetation and to encourage wildlife. A few additional trails might also be developed. Any conservation management program should be coordinated with the Brookline Conservation Commission and their management of the Hoar Bird Sanctuary.

Partial List of Plants Found in Hancock Woods and the Hoar Bird Sanctuary

Yellow birch	Cattails
Sweet birch	Wintergreen
Paper birch	Partridge berry
Red maple	Grasses
Pin oak	Sedges
Canada hemlock	Chicory
American beech	Goldenrod
Tree-of-heaven	Jewel-weed (touch-me-not)
Sugar maple	Choke cherry
Eastern red cedar	Duckweed
Russian olive	Skunk cabbage
Mountain ash	Mushrooms
American chestnut (sprouts)	Ferns
Wild rose	Fungus
Witch hazel	Lady slippers

Portions of this list are from observations made during a site visit in January 1976 and the rest is from the Brookline Conservation Commission "Ecol-lator", October 1973.

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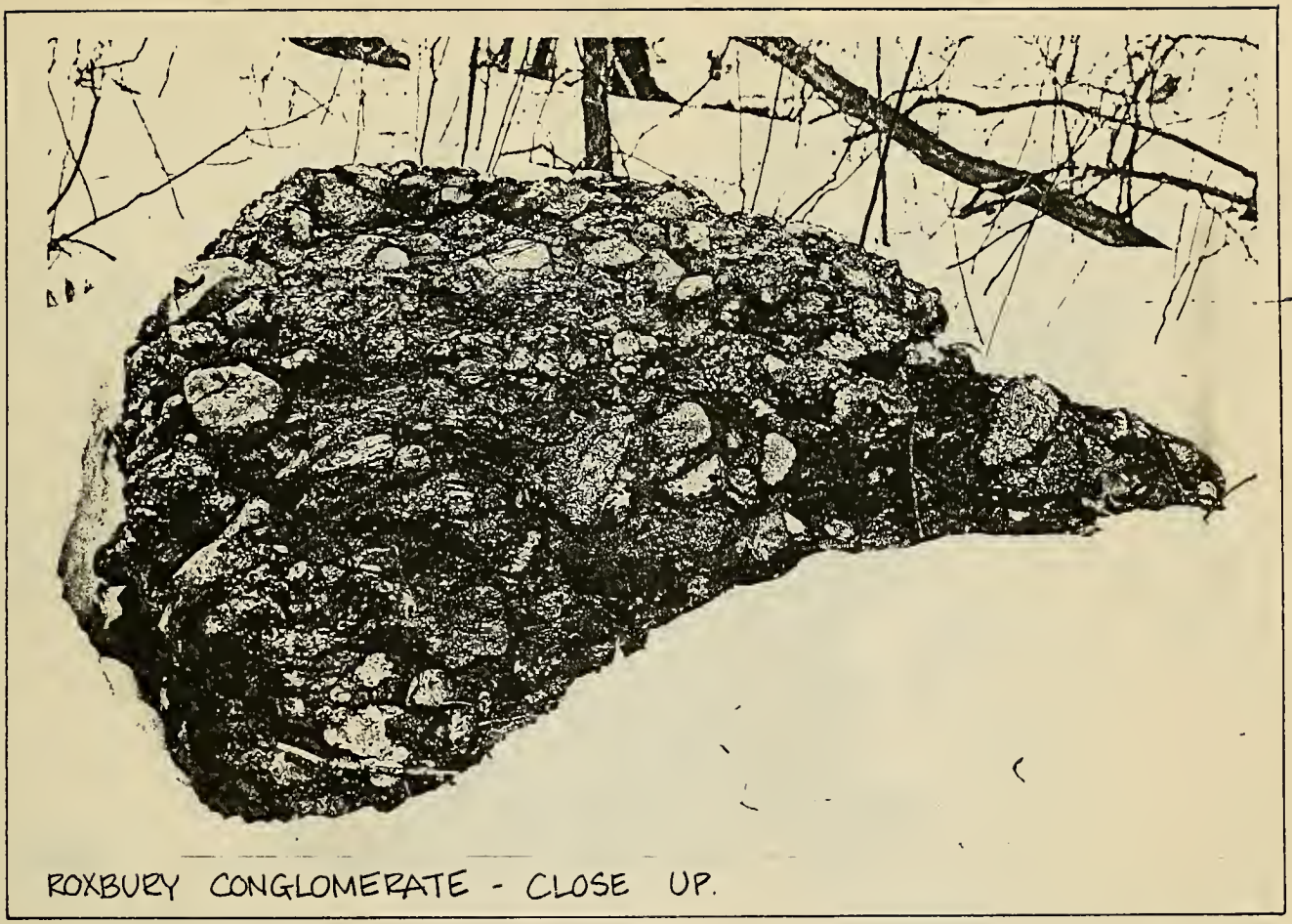
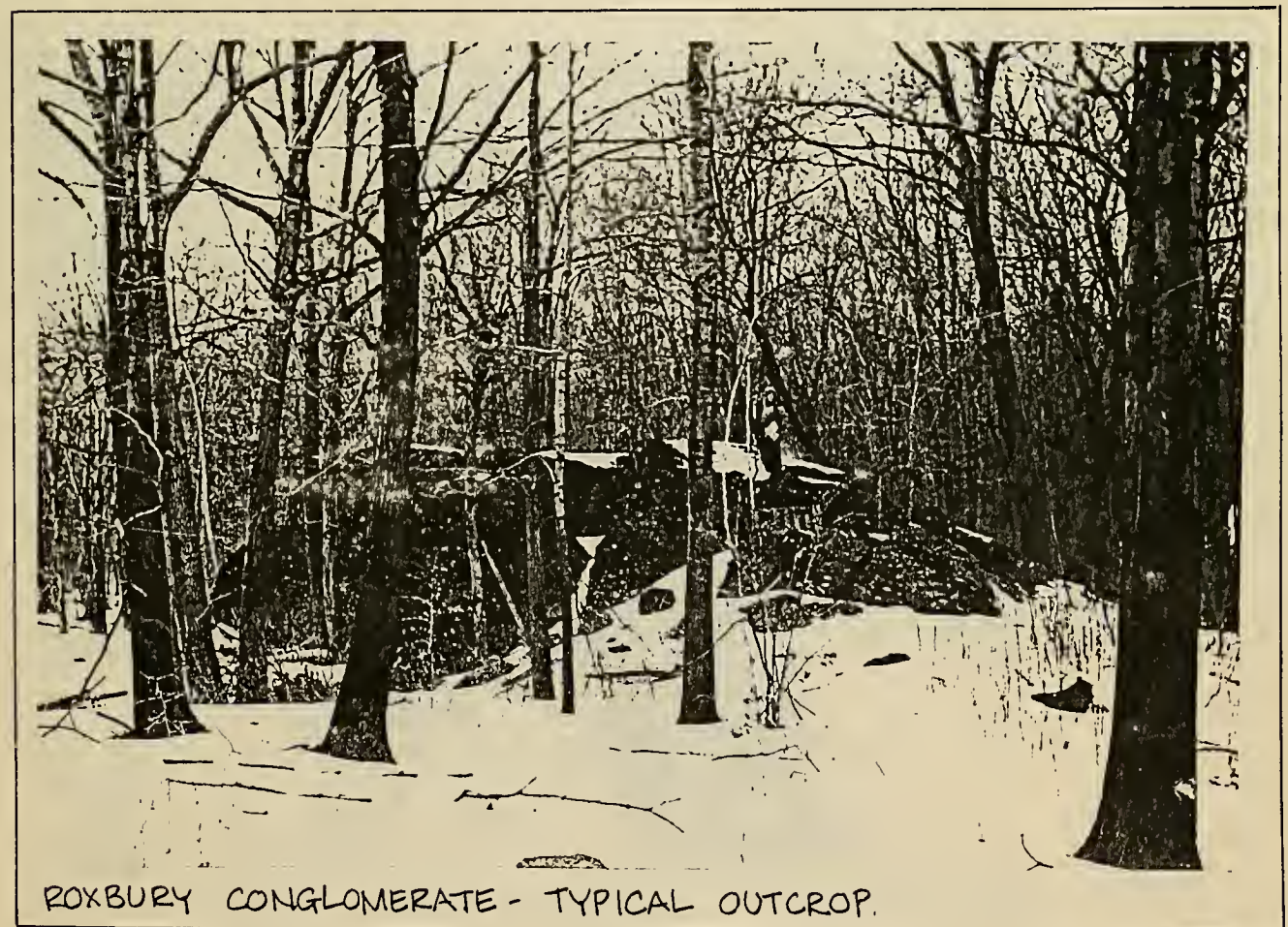
Note: Information was also provided verbally by the staff of the Boston and Brookline Conservation Commissions and the Boston Urban Wilds Project, January 1976.

VIEW FROM ROCK OUTCROP KNOLL.

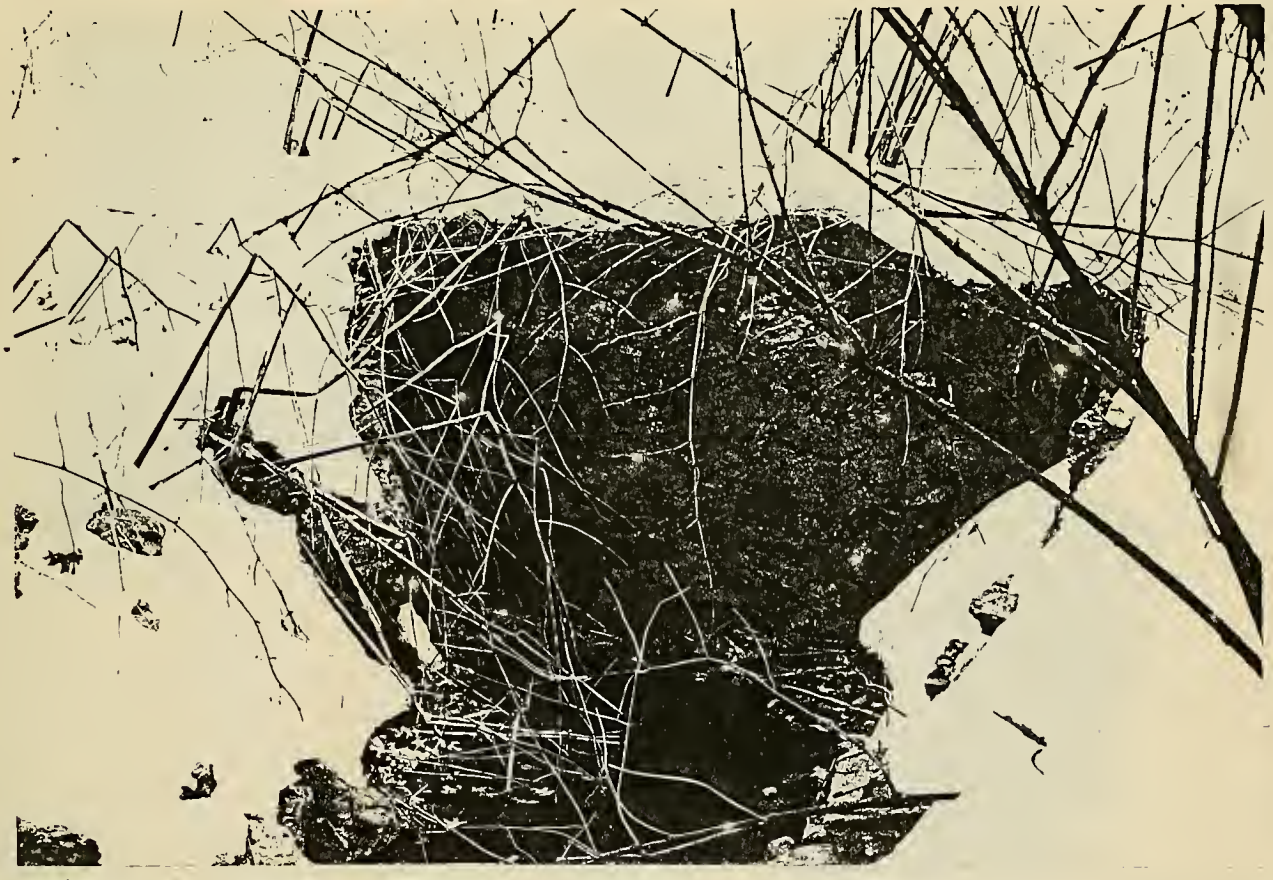
OAK GROVE ON KNOLL.



ROXBURY CONGLOMERATE - CLOSE UP.

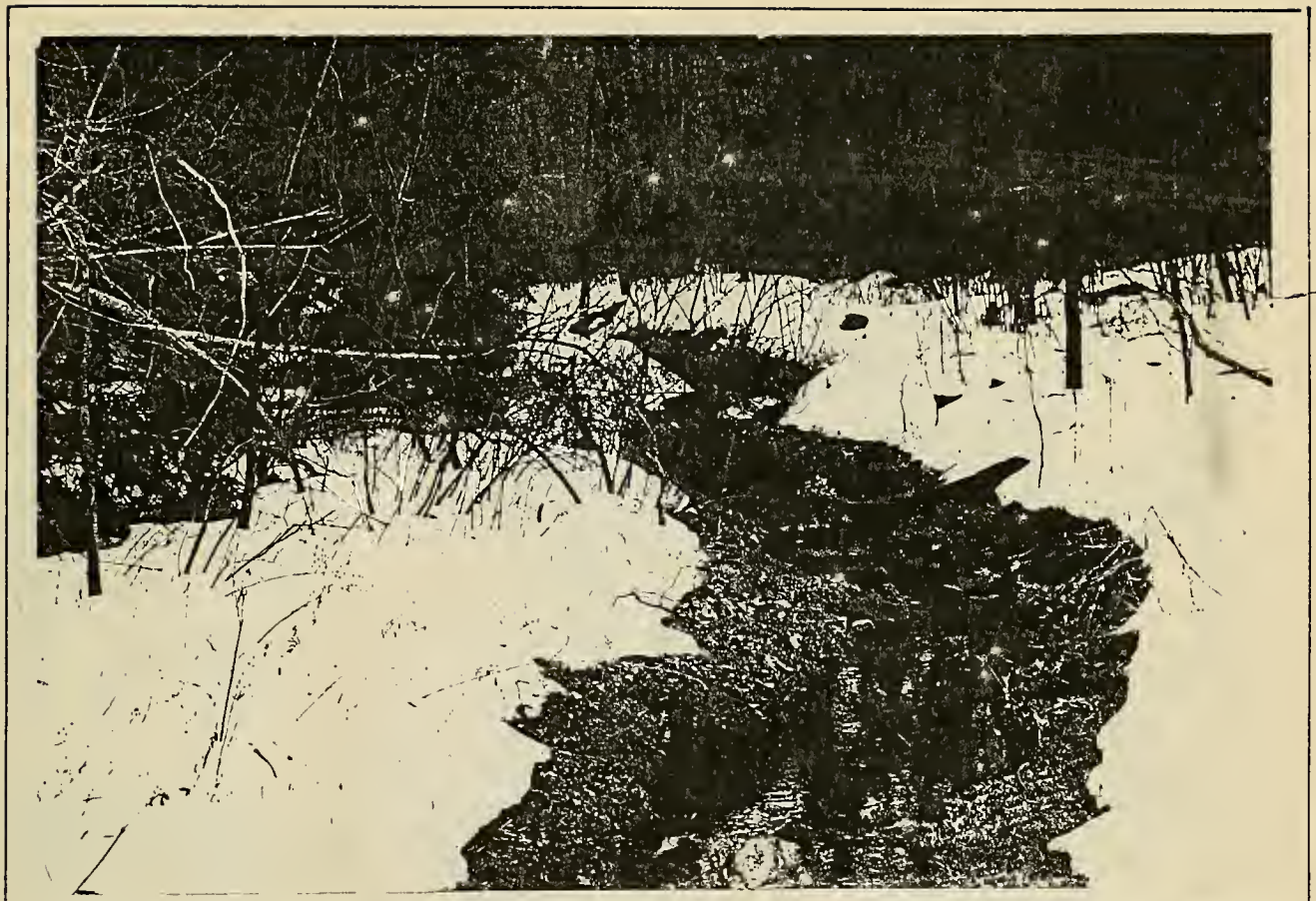


ROXBURY CONGLOMERATE - TYPICAL OUTCROP.

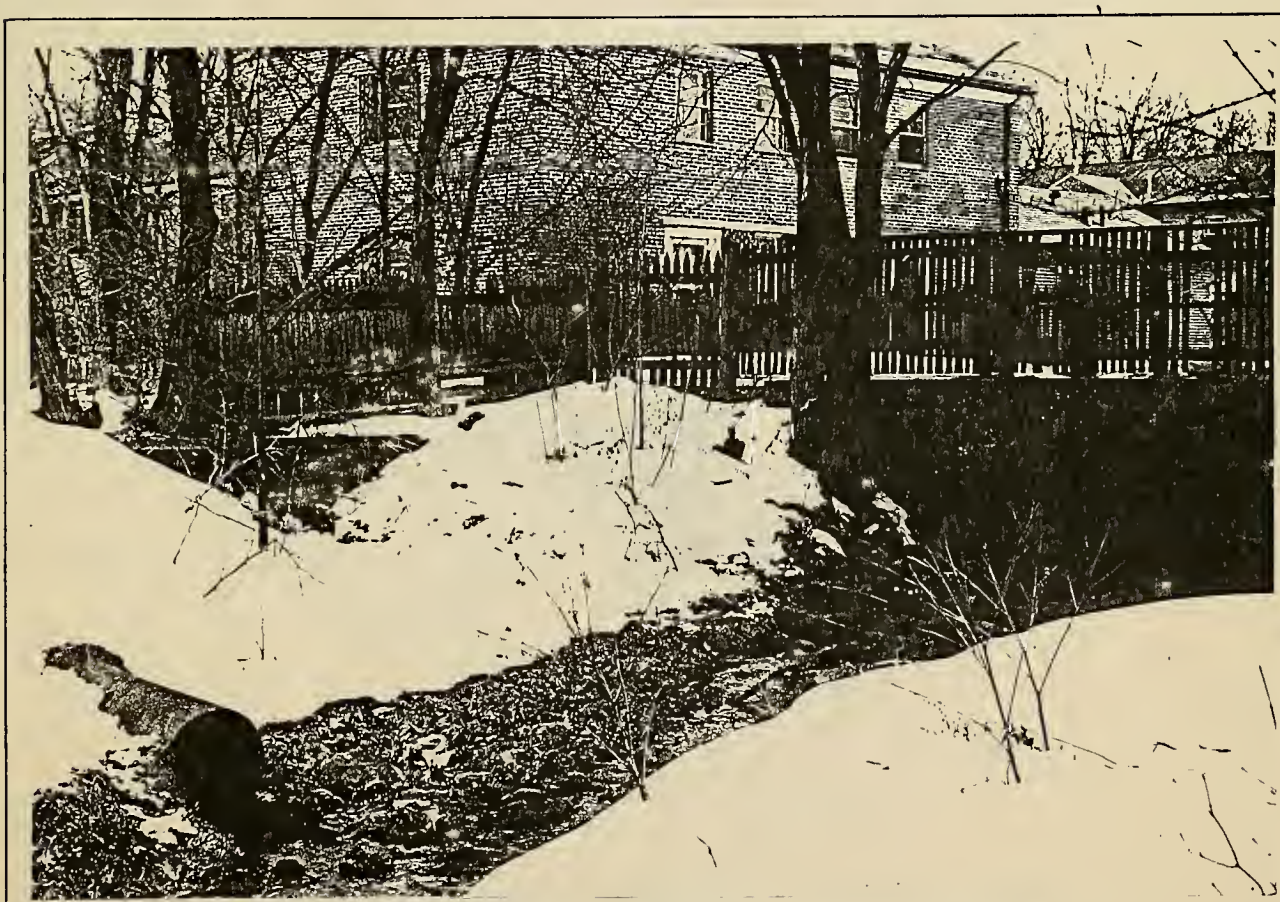


INLET TO STORM DRAIN UNDER V.F.W. PARKWAY.

BROOK CHANNEL WHICH FLOWS EAST TO STORM DRAIN UNDER V.F.W. PARKWAY



SAWMILL BROOK SOUTH BRANCH AS IT PASSES THROUGH BIRD SANCTUARY



ORIGINS OF THE SOUTH BRANCH BEHIND BAKER SCHOOL.

BIRDS NEST IN SOUTHWEST SECTION OF HANCOCK WOODS.

HOLE & TRACKS OF SMALL MAMMAL.